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AUTHOR Hollomon, John W.
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ABSTRACT

This paper investigates the evidence for adult-infant ratios in day care centers, finding that current evidence is based largely on the premise that a low number of infants per adult should result in greater interaction between the adults and the infants, and, thereby, better infant care. Support for this premise is derived from three main sources: (1) research conducted on animals and institutionalized infants; (2) research which shows that small numbers of children per adult can result in increased IQ's and cognitive functions; and (3) statistical reports which show high infant mortality rate, particularly among children of low social status parents. It is concluded that the polemics over staff-infant ratios in day care centers can only be resolved by scientific research into day care center conditions, and surveys of staff and parents of children served in the centers under consideration. Quality day care, rather than ratios, is the issue to be emphasized. Also discussed are a number of points of departure for determining quality day care and characteristics of good early childhood programs. (Author/MS)

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Adult-Infant Ratios in Day Care Centers--What Evidence?

John W. Hollomon

Founding President

National Association of Child Care Administrators

Associate Professor of Early Childhood Education

Division of Education

The University of Texas at San Antonio

San Antonio, Texas 78285

PS 009082

Adult-Infant Ratios in Day Care Centers--What Evidence?

The problem of staff to infant ratios in day care centers has become increasingly more debatable, especially among private and proprietary day care operators. This debate has become so popular that it has had some effect in delaying action in Congress in behalf of the Child and Family Services Act, and the filing of a law suit in federal court to block the enforcement of that part of Title XX legislation which requires states to rigidly enforce small numbers of children to staff ratios in day care centers. The result has been a delay in the imposition of the new federal guidelines for staffing day care centers.

There is a lack of scientific evidence to support either the existing federal or state staff-infant ratios in day care centers. Neither is there sufficient scientific evidence to support those who wrangle for higher numbers of infants to staff ratios nor those who argue in favor of lower numbers of staff to infant ratios (Zaccaria & Hollomon). The debate is similar to the two women who argued for possession of the child in Solomon's court. Without sufficient scientific evidence to support either position, the

debate threatens quality infant care by placing more emphasis on ratios than on the survival and coping needs of infants in group care away from home. "The adequacy of adult/child ratios is quite clearly one of the most significant unresolved problems for day care" (Fowler, 1975, p. 17).

The Federal Interagancy Day Care Requirements (FIDCR) for staff to infant ratios, as well as those required by many states, are based largely on the premise that a low number of infants per adult should result in greater interaction between adults and infants, and, thereby, better child care. The support for this premise comes from three main sources: (1) research conducted on animals and institutionalized infants reared in social isolation and deprived of the requisite sensory stimulation for normal development, including social and emotional deprivation syndromes; (2) research findings which show that small numbers of children per adult can result in increased IQ's and cognitive functioning; (3) and statistics which show that the mortality rate for children under five years old is high, particularly among children of low social status parents.

Therefore, the purpose of this paper is to present

the evidence which supports the above premise , to challenge this evidence for its relevance to staff-infant ratios in day care centers, and to point out some of the basic things we need to know in order to establish adequate staff-infant ratios in day care centers.

The Evidence

In spite of the debate, just about every state in the union has established staff-infant ratios for day care centers. It is assumed that surely there is sufficient evidence, theoretical and empirical, to support these ratios. It is to be noted that infancy as used in this paper is the period from birth to three years old.

Theoretical Positions

In Erikson's (1963) resolution of crisis theory, he proposes that the first of these crisis is the infant's need to develop a basic trust in himself and in his environment. If the infant is deprived of consistency and sameness of experience during the earliest period of his or her life, the infant fails to develop a rudimentary sense of ego identity correlated with the outer population of familiar and predictable things and people. However, Erikson hastens to say that the

amount of trust derived from earliest infantile experience does not seem to depend on absolute quantities of food or demonstration of love, but rather on the quality of the adult-infant relationship.

Erikson concludes that without a quality adult-infant relationship combined with sensitive care, the children are deprived of the opportunity to develop a firm sense of personal trustworthiness, of identity combined with a sense of being "all right," of being themselves, and of becoming what other people trust they will become within their culture's life-style. There is no evidence that harm comes to infants so long as they have one consistent devoted person to care for them during the critical attachment period years (Weiner & Elkind, 1972; Goldstein, Freud, & Solnit, 1973). Mead (1970) stesses the need for at least one adult who interacts with the child every day, recognizes a new skill, encourages progress, or sometimes takes alarm at a sudden lack of progress. Only individual attention can turn an infant child into a full human being, capable of growth. Mead reports that the Israeli Kibbutz experience shows that the nurse who must divide her time and strength among several babies of the same age is not loved, and later rejected.

Mead concludes that small children also need someone who is intensely interested in them, who will spend endless hours responding and initiating, reinforcing new skills, bolstering self-confidence and sense of self. She emphasizes that children who are reared in institutions, while receiving perfectly adequate physical care, fail to develop and often sicken and die. During the infancy period there is a need to establish an enduring emotional relationship between adult and child, involving frequent reciprocal interaction around activities which are challenging to the child. The effect of such interaction, according to Bronfenbrenner (1974), is to strengthen the bond between the adult and child, enhance motivation, increase the frequency and power of contingent responses, produce mutual adaptation in behavior, and thereby improve the adult's effectiveness as a teacher for the child, further the latter's learning, and, in due course, establish a stable interpersonal system capable of fostering and sustaining the child's development in the future.

Empirical Evidence

Adult-infant ratios established in day care centers have been largely based on the results of research conducted on infant animals (Harlow, 1951 & 1958;

Thompson & Heron, 1954) and on institutionalized human babies (Skeels, 1965; Dennis & Najarian, 1957). In each of these studies where the subjects were reared in social isolation or deprived of normal social and sensory experiences--whether infant animals or children--they consistently exhibited retarded social play patterns, apathy, developmental lags, and bizarre and impoverished repertoires as they grew up.

Harlow (1951) demonstrated how depressed monkeys, disturbed because of the absence of an adult attachment, preferred the cloth covered mother substitute to the metal one. It is appears that animals attempt to compensate for lack of positive emotional response. In Honig's (1974) review of the literature related to positive parenting, she concluded that responding contingently to infants' babbling and rudimentary attempts at talking will have specific positive effects on furthering their vocal output. However, her review failed to show a particular relationship between the amount of maternal talking to a baby alone and an infant's vocal output.

Provence and Lipton (1962) contrasted the early social and intellectual development of infants in institutions with that of home-reared children. On

almost every variable measured, the institutional infants were found wanting. They were less outgoing and socially alert, less responsive, less interested in objects, less curious, and generally less advanced. Skeels (1966) studied the effects of adoption on children from institutions. He concluded that a high degree of one-to-one emotional relationship between mother-surrogate and the children can have a positive effect in rate of mental growth and social development.

Honig reported on research conducted by Tizard, Cooperman, Joseph, and Tizard (1972), which compared the amount of talking staff did to older children with that to children under two years old. The findings of their study indicated that children's language comprehension scores were highest where staff provided the most information-giving talk to children. This implies that the staff should be individuals who can accept children as they are; who are endowed with humor, imagination, curiosity, ingenuity, and eagerness for living; also who are able to derive pleasure in children's success and have sympathy for their failures (Committee on Early Childhood, 1972).

In Fowler's (1975) essay on how adult-infant ratios influence infant development, he tabulated developmental

age groups and teacher-child ratios, including the characteristics of different infant age groups that affect caregiving ratios. In the process, he recommended staff-child ratios of 1:2 for infants between birth and 12 months; 1:3 between 12-24 months; and 1:5 between 25-36 months. He cites the khild Welfare League of America (1969) as setting a ratio of 1:2 for infants, and the American Academy of Pediatrics (1971) as recommending a ratio in infant group care of 1:4 for both infants and toddlers, a level strongly supported as minimum for adequate caregiving by the research field (Caldwell & Richmond, 1968; Haith, 1972; Honig & Lally, 1972; Lichtenberg & Norton, 1970). Fowler emphasizes two points:

> Where ratio improvements are made in the same environment, developmental outcomes typically improve--as in the Skeels and other residential-care studies. Second, outstanding developmental changes and levels emerge only under the best ratio conditions, usually 1:3 or less (p. 24).

There is sufficient evidence to confirm that a 3-year-old child, regardless of his socioeconomic status, who functions highly in the areas of cognitive, language, emotional, and social development, has experienced significantly more interactions with adults in intellectually and affectively valuable activities (Honig & Lally, 1975, Fowler, 1975; Bronfenbrenrer, 1974; Watts, Barnett & Halfar, 1973; Erikson, 1963).

If these kinds of interactional activities are not provided for infants in day care centers, then, day care centers could have an adverse effect on these important aspects of infant development.

Adult-infant ratios in day care centers are also based, in part, on the infant mortality rate. It is high enough, especially amoung the poor in this country of plenty, to cause anxiety and sincere concern on the part of those who establish the ratios. Given the high levels of our economic resources and medical technology, and our relatively high infant mortality rate, the current adult-infant ratios reflect a concern for the physical survival, health, and safety of young children. The ratios, then, are perceived as relatively efficacious means of detecting and preventing disease and hazardous conditions that threaten the physical survival of infants. The ratios also reflect a concern for preventing accidental injuries. Thus, a caretaker is required to be near the infant at all times, so that his well-being can be monitored.

Keniston (1975) considers our infant mortality rate to be scandalously high. He points out that the U.S. stands fifteenth among the forty-two nations with comparable data. When ranked by the United Nations,

the U.S. was just below East Germany and just above Hong Kong. "Infant mortality rates for American non-whites are almost twice those of whites (p. 6). Keniston concludes that we are among the very few modern nations that do not guarantee adequate health care to mothers and children.

Our country puts its children last in the spending of the federal health-care dollar. As Velie (1974) has stated it: "So a baby born in Iceland, Japan or any of 12 other countries has a better chance of surviving its first year than one born here" (p. 176). Velie considers it to be even more scandalous that the U.S. mortality rate for children in their first year who were born to poor or near-poor parents is twice as high as for middle-class children. Children receive only a very small percentage of the federal health-care dollar (approximately 12%). To qualify for the pittance funded under Medicaid, children must be paupers with poverty written on their foreheads. Velie concludes that since nobody is minding the children of the poor and near-poor in health insurance either, and since most policies do not cover doctors' visits, children of the working poor are unlikely to see a doctor until they become seriously ill.

Research Evidence

Honig and Lally (1975) and Bergstrom and Gold (1974) have developed and used observational instruments, which yield observable and quantifiable data relative to the quantity and quality of staff-child interaction. Both of these instruments have been used to measure such variables in adult-child interaction as sensori-motor, cognitive, language, and socio-emotional development. In addition, the Bergstrom and Gold instruments (Observational Schedule in Child Center and Interview Schedule With Center Staff) can be used to assess these variables as they relate to the aims and objectives of the center program, the availablity and use of materials, the arrangement and management of the center enviro-ment, special services, and the like.

In their report on Sweeden's day nurseries, Bergstrom and Gold focused on programs for infants and toddlers. They found that the staff-infant ratio for children from 6 months to 3 years ranged from 1:3 to 1:4, with some units having younger children having a higher staff-child ratio. "Staff-child ratios are primarily dependent on the age of the child, with a higher ratio established for the youngest group" (p. 40). For

example, the ratios ranged from 1:3+ children in groups of 10 with an age range from 6 months to 1½-3 years, and 1:4 children in groups of 8 with an age range from 1½-3 years. In groups of 8 children with an age range from 1-3 years, the staff-child ratio was 1:2+. In groups of 10 with an age range from 6 months to 2 years, the ratio was 1:3+. In other day nurseries with groups of 20 infants with an age range from 3-9 months, the ratio was 1:3+. Generally the ratio for infants with an age range from 6 months to 3 years was 1:3+.

Bergstrom and Gold reported that at least one child nurse was among the adults who cared for each group of infants in the five nursery units they studied. They singled out five areas for specific observation; (1) motor development, (2) cognitive development, (3) language development, (4) emotional development (ego development and growth of self-image), and (5) social development (development of trust and autonomy). They rated the amount of emphasis placed on each of these areas in accordance with the degree of emphasis the activity received from the staff and the children, and the arrangement of the environment. Bergstrom and Gold also included the availability of materials in the environment that

fostered each area of development. In addition, they included the location and accessibility of the materials, the level of involvement of the children with the equipment, and the amount of encouragement the staff displayed in having the children use the materials.

Generally, Bergstrom and Gold found that the staff appeared to take a tutor-like role, working primarily with one or two children for short periods of time; that the staff encouraged the children to use the materials; that some staff attempted to verbally label objects and activities found in the children's environment; that diapering and washing and feeding appeared to be times for one-to-one interactions between staff members and a child; that a comfortable, safe, positively reinforcing environment was provided for the children; that staff smiled directly at the children and recognized individual children, using supporting gestures to encourage the child and providing physical contact and closeness.

> However, the staff appeared to cater more to the general well-being of the group that the individual child. Little emphasis was placed on making certain that each child had his or her favorite toy or favorite food (p. 47).

Often when an infant would cry, a staff member would place a pacifier in the infant's mouth, even when the staff member was aware that the child might be crying because he wanted food. This was because the infant was scheduled to eat later.

Honig and Lally (1975) used two checklists they developed to assess the behavior of four superior caregivers of infants under 18 months and from 18-36 months. They assessed the facilitation of language development, positive and negative social-emotional (trust and mistrust) behaviors toward and with infants, presentation of Piagetian games (the facilitation of cognitive or concept development), provisions of care-giving routines to infants (physical well-being, health and safety), performance of necessary house-keeping tasks, provision of motoric and kinesthetic experiences for infants, and optional items (i.e.: attention given a particular infant in fostering his or her creativity, sustaining involvement, and the like).

The results of their observations of the behaviors of four highly experienced, master teachers, two of younger and two of older infants revealed: (a) Lang-uage inputs were prominently contributed by teachers

of both younger and older babies, which accounted for about one-third of all teacher behaviors with younger babies, and almost half of the total behaviors of teachers of older infants. (b) The teachers demonstrated a sensitivity to the young children's increasing needs for independence. (c) Physical loving contacts were slightly more to younger babies. (d) Although negative social inputs to younger babies were quite rare (1% to 4% of all recorded behaviors), they occurred almost three times more often in afternoons than mornings, and mostly in the lunch area. (e) Twice as much preparing and feeding of food and one-and-a-half times as much room tidying were done by teachers of younger babies compared to their colleagues working with toddlers. (f) Appropriate games and opportunities for cognitive or concept learning were carried out by all four teachers in about one-fourth of the time periods sampled.

Honig and Lally concluded that the data show that the years of in-service training that all four teachers had experienced were quite successful in helping them become familiar with and proficient at such specialized skills, requisite for providing quality infant care. Although Honig and Lally did not say what the staff-child ratios were, their results do indicate the capabilities of superior infant caregivers.

In Bronfenbrenner's (1970) study of preschool centers in Roussia, he reported that there was one "upbringer" for every 4 charges under 12 months. The upbringer spends a specified amount of time (a series of reinforcement schedules) with the infant stimulating and training sensory-motor functions, language development, self-reliance, and social behavior.

Zaccaria (1973) conducted a survey of staff-child ratios in Texas, in which day care directors were asked to indicate the maximum number of infants the average day care worker could effectively supervise. His results revealed that directors generally felt that an average child-care worker could effectively supervise up to 4 infants under 12 months, and at least 6 between 1-2 years. Directors thought that superior workers could effectively supervise up to five infants under 12 months and up to 8 between 12-24 months. Directors felt that average workers could effectively supervise up to 9, and superior workers up to 11 children between 24-36 months.

The staff-infant ratio for the average worker, reported in the Zaccaria survey for the 0-12 month old range, is the same as that reported by Bronfenbrenner for the same age range in Roussia, slightly lower than

those reported by Bergstrom and Gold in Sweeden, and somewhat similar to the FIDCR staff-infant ratio. However, all the directors responding to the survey felt that any worker should be able to supervise two infants under 12 months. The current FIDCR staff-infant ratios are 1:1 and 1:4 for infants from 0-6 weeks, and from 6 weeks to 36 months, which apply to day care centers funded by Federal dollars respectively.

In a questionaire printed in the November, 1975 issue of Voice for Children, readers were asked to respond to a series of questions, developed by HEW and Day Care and Child Development Council of America staff. The purpose was to assertain how the readers felt about the FIDCR staff-child ratios. Using the highest percentages of the data computed, collected from 296 respondents relative to staff-infant ratios for the typical worker and the superior worker, the results revealed the following: For children cared for by the typical worker, 37.2%, 24.5%, and 29.3% felt that the staff-infant ratios should be 1:2, 1:3, and 1:4 for 0-6, 6-24, and 25-36 month olds, respectively. For infants cared for by the superior worker, 36.1%, 35.8%, 27.8% thought the ratios should be 1:2 for infants from 0-6 months, and 1:4 for infants between 6-24 months and

24-36 months respectively (Kilgore, 1976). Although these percentages do not represent the majority of the few who responded to the questionnaire, they do appear to support the existing FIDCR staff-infant ratios for the age-groups identified. However, the data collected from this kind of survey, which did not control for the individuals who responded to it, must be held in circumspect to say the least, and unscientific to say the most. Any interested person could have reproduced or secured additional copies of the questionnaire, passed it around to others, and requested that they respond a certain way, for the purpose of influencing policy decision-making relative to the particular.

Fowler (1975) uses the Syracuse study to point out the intellectual levels attained under a 1:4 ratio--111 IQ for low parent-education children and 125 IQ for high parent-education children. He stresses that these levels fall below the levels attained in several of the studies with ratios of 1:3. However, one must not forget that the evidence as it relates to increased IQ points and cognitive functioning is based on well-financed, small demonstration projects or on university related centers.

Keniston (1975) believes that we are witnessing a growing emphasis upon the child as brain; upon the

cultivation of narrowly defined cognitive skills and abilities; and above all upon the creation, through our preschools, of a breed of children whose value and progress are judged primarily by their capacity to do well on test of IQ, reading readiness or school achievement. Keniston also stresses that children are whole people, full of fantasies, imagination, artistic capacities, physical grace, social relationships, cooperation, initiative, industry, love and joy, which our system of preschooling and schooling largely ignores by concentrating mostly upon the cultivation of a narrow form of intellect.

We know that the optimum staff-infant ratio in a day care center depends in large measure on the training, experience, and capabilities of the staff; the peculiar needs for physical contact, emotional response, security, and healthy well-being of each infant; the physical and social environment, including the overall climate, the use of space and time, the activities, the methods and uses of equipment and materials, and the quality of the interactions that occur between infants and staff (Gordon, 1976; Aldrich, 1974; Prescott, Jones, & Kritchevsky, 1972). Gordon (1976) points out that staffing guidelines are not so much just the adult-child

ratio as the use of staff. Although a ratio is important, Gordon insists that assignment and organization will determine if there is the provision of an adequate caring and learning environment. The individuality of each infant is an important factor in the staff-infant ratio. Individual children have their own energy needs, their own rhythms, their own sleep needs, and so on. Just to have a staff-infant ratio of 1:2 or 1:3 in a center guarantees neither quality care nor continuity of care; nor does it guarantee an optimum interactional environment for the growth and development of young children.

Issues and Impertinent Questions

The purpose of this section is not to take sides--either with those who wrangle for higher numbers of infants to staff ratios or those who argue in favor of lower numbers of staff to infant ratios--but rather to pose impertinent questions and raise the issues. In short, the purpose is to speak to the conditions--to challenge both sides to seek revelant and pertinent answers, through scientific research--and to rethink the issues as they relate to the care and well-being of infants in day care centers. Most of the evidence presented with the exception of that related to increased IQ points and cognitive functions, was not gathered in typical day care centers. Even much of that which was

gathered in day care centers often lacks scientific rigor as it relates to staff-infant ratios.

The Issues

No one would disagree with the fact that we need good staff-infant ratios in day care centers. As Senator Walter F. Mondale argued in the U.S. Senate in an effort which successfully killed an attempt to block new federal standards for day-care centers: "It ought to hurt our consciences if we pay for day care centers that damage children." But, at the same time, we need scientific evidence collected in day centers to determine what good ratios are. In the process of seeking solutions to the ratio debate, one must not forget that ratios are only one of the host of basic conditions along with the physical and social environment, equipment and materials, staff competencies and personalities, and programs and methods that weave together to make up the fabric of quality care (Fowler, 1975).

We do not yet know, with precision, what specific kinds of sensory stimulation--and under what conditions--particularly as these conditions relate to what specific family features in which cultures are appropriate in day care centers. Developmental lags appears to be irreversible deficits in older children, because their

needs during infancy for positive emotional response, stimulation, security, autonomy, belongingness, achievement, self-esteem, and other important intellectual and social experiences were unmet over long periods of time. The extent to which the infant's needs are met in the home compared with the extent to which they are met in day care centers ought to be determined, and included in the decision-making relative to staff-infant ratios in day care centers.

Day care should be an extension of and a supplement to the care infants receive at home. Parent-child interactions provide for greater adaptation and identification on the parts of both parents and infants. The parents can predict their child's behavior through the understanding they have of their own behavior. Parents provide a basic social unit; their expectations for and from the child determine, in large measure, his future growth. Parents have a predisposition to accept the biological, social, and psychological roles of parents, which caretakers may not have. Parents live with the child longer than the caretakers. The family situation is the environment that affects the children for all the years of their growth. It is the core of a child's life, not the day care center. Consequently, the day

care center, no matter how good, is peripheral to children's growth. Early care and learning in a center can work, in a limited way, but a center or any other child care arrangement, will never be home (Stein & Smith, 1973).

What the mother does in the infant years is essential to what a day care staff can do in the center. If the discrepancy between what the mother can do at home and what day care staff can follow up in a group setting is too great, then the center ceases to function as it is expected to do (Mead, 1970). Unless infants find a connection between their experiences at home and those of the day care center program, they may gain little of lasting value from the latter and the quality of the children's relationship with their parents or center staff may be diluted (Butler, 1970).

Honig (1974) suggests that because group care of infants is meant to supplement and not to supplant the parent-child relationship, group care does not mean that infant learning is indefferent to the quality of caregiving offered in day care centers. She further suggests that in meeting the needs of those individual small persons we call infants, it is important to remember that rarely does a single action, a single

episode in isolation have a sufficient impact either to disrupt or accelerate development. In the process, Honig emphasizes that some babies who are given a bit less affection and somewhat more interesting sets of toys to play with develop nicely. Other babies spend more time on an indulgent caregiver's lap and hip and are offered fewer object permanence or means-ends games to play. They too may thrive rather well. Honig concludes that care giver sensitivity, acceptance, and cooperation in contrast to insensitivity, rejection, and interference seem to set the conditions which promote good infant development.

Schaffer and Emerson (1970) point out that our conclusions about the role of physical contact in the development of the young child are still largely of a speculative and controversial nature. They conducted research which included a systematic analysis of infants who eagerly sought physical contact and those who did not seek it. They found that one group consistently sought out cuddling situations, and another group consistently responded negatively to cuddling. The former group was labeled the "cuddlers," and the latter, the "non-cuddlers." They concluded that:

> For some infants, it appears, contact is not comforting. Certain forms of it may be sought for the sake of

> obtaining extra stimulation ("rough play," carrying around, etc.), but the closer, more intimate kind of physical contact which is so satisfying to some infants is resisted and actively avoided by others (p. 201).

Also, staff-infant ratios based on the fact that the mortality rate for children under five years old is greater for infants during the first year of life, followed by the second year of life, appear to be untenable. The infant mortality rate cannot be explained solely in terms of some maternal idiology or any other value dimensions related to day care in general. The infant mortality rate applies more specifically to infant caring practices in specific cultural subgroups--their socioeconomic conditions or subsistence levels--and both the availability and accessibility of medical care and technology. That is, high infant mortality rates among certain subcultural groups may be more attributable to the limited resources that can be utilized as preventitive measures for responding to desease and hazardous conditions. Infant mortality rates probably reflect less the overall parental and caregiver concern for the physical survival, health, and safety of the child (LeVine, 1974). The deaths of young children

certainly do not indicate that a high staff-to-infant ratio in day care centers can circumvent the high infant mortality rates among peoples of diverse cultural values and low socioeconomic conditions.

The Impertinent Questions

In order to adequately deal with the issues involved in the debate over staff-infant ratios in day care centers, one must pose impertinent questions and seek pertinent but relevant answers. Fowler's (1975) review of the literature related to how adult-child ratios influence infant development is one of the most expensive attempts to deal with the issues. He says on the eighth page of his essay: "There appears to be no studies of day care with poor ratios, persumably because the more recently established day-care agencies have learned the bitter lesson from the earlier orphanages" (p. 24). On subsequent pages he praises the efforts of infant care in day care centers, and makes recommendation for dealing with the high cost of infant care in day care centers. However, it is in the preceding seven pages that he speaks to the conditions of adult-infant ratios in child care centers, as these relate mostly to IQ points and cognitive functions. Fowler's review was published in one of

Canada's most prestigious journals, Interchange, which probably has been (or will be) read by many people who are in positions to make decisions that affect staff-infant ratios in day care centers. Therefore, the major portion of this section is devoted to posing questions to the issues raised in this review.

Fowler deals with the problem of infant rearing practices in group settings as these are affected by adult-child ratios and the quality of care the infant receives. He recognized the extent to which this problem is yet unresolved today. He includes in this problem the quality of the child's physical and social environment superimposed by the child's basic coping and survival needs. In addition, he emphasizes the role of trained child-care providers in the overall development of infants. In this manner, Fowler deals rationally with one of the most important problems facing both parents of infant children and child-care providers, whose efforts are directed toward making available the highest quality of care for the infants served.

However, most of the results of the data Fowler cited as having sabubrious effects were gleaned from

projects which had a research emphasis, and, whose budgets obviously permitted the type of adult-infant ratios that could hardly but produce positive outcomes. In spite of the fact that Fowler has done his homework well, and has ratiocinated the problem with a substantial amount of scientific research and empirical data, he seems to equate quality child care with increased IQ's and cognitive functioning, "because of the relative precision of findings (1975, p. 18)," while alluding to the socialization process. But, he did not clearly distinguish between the role of the child-care giver as it relates to providing a decent place for the infant to live, play and develop away from home and that of a cognitive developer. Also, there was no mention of studies related to ethnocentric and cultural differences and beliefs relative to child care arrangements, nor was these mention of what parents--representing these differences--perceive as quality child care.

The point is that Fowler raised the issues to which the following impertinent questions are posed. Do parents of infants weigh the fulfillment of physical and health needs as being equally important as intellectual development? Have we yet established indisputable criteria which would indicate that increases in cognitive

functioning positively affect other important areas of development of the whole child to live in the whole world? What evidence is there to precisely indicate that an increase in IQ--which only occurs for a significant few under the so-called best conditions--results in an overall well-adjusted individual? Granted that "high IQ children consistently enjoy the most rounded personalities, are the most socially adapted and successful in school achievement in later years (p. 19)," the fact still remains that a high IQ does not necessarily predict to success in the economic or social sphere in later years, such as in careers, marriage, and upward social mobility. Besides, there is a large percentage of people who IQ's, as measured by IQ tests, failed to predict success in school achievement in later years, but who experience success in the economic and social spheres by any standard of measurement. The question is, then, what percentage of their success can be attributed to the quality of child care they received away from home, as measured by adult-child ratios and IQ gains? To what extent are the areas heavily represented on IQ tests, "verbal and numberical abilities, general knowledge about the world, logical reasoning, and problem-solving (p. 19)," important to the quality

of care given an infant child as determined by adult-child ratios? The well-known and frequently quoted Skeels and Dye (1939) and Skeels (1966) studies indicate that these variables are important, but they do not specify with sufficient precision, how much, how often, and under what conditions they are necessary to make scientific decisions about adult-infant ratios in day care centers.

How much time does an infant spend sleeping while in day care? How much time does an adult need to spend with an infant in quality interactions to increase cognitive functioning, and under what conditions? If these questions are not answered with specified criteria, including age-developmental levels, how can a child-care giver--even one schooled in child development and education--provide the type of care that meets these conditions? Well-known early childhood scholars such as Erikson, Bronfenbrenner, Piaget, Gordon, and Honig have insisted that it is the quality of the interaction, not the amount of time spent in interacting with the infant, that determines healthy development.

To what extent is the child-care environment, away from home, to supplement or enrich an impoverished home environment? If low socioeconomic status parents

with more than three or four close-aged children at home, living in impoverished conditions, are unable or unwilling to provide the continuity of quality of care provided by small adult to children ratios in the setting away from home--and even if IQ gains are measured--how long can the child sustain them without an intact cohort? (Mueller & Jennings, 1974). An intact cohort is an ideal dream but an impracticality, considering the mobility of low income parents and the instability of the job market. Longitudinal investigations show "that IQ development fluctuates with environmental conditions" (Fowler, 1975, p. 19).

It appears that before we can secure validated, replicated studies of longitudinal types, other than those on institutional privation that resulted, in large measure, from ratios averaging one adult to 10 infants, we have little knowledge of import on which to base adult-child ratios in day care centers. Day care is exactly what the words imply, "day care," not institutional care of groups of infants, where the child-care setting often produces maternal deprivation syndromes in infant children. The primary function of day care is to provide quality care, not tutoral services for the purposes of increasing cognitive functioning and producing IQ gains. Infants placed in day care centers, not like institu-

tionalized infants, are often placed there during a specified time during the day for no other reason than quality care in a group situation until the parents or parent figures pick them up and return them to the continuity of care provided in the home environment. How can we equate a temporary day-care situation with an institutionalized condition of 24-hour residential care? Even if we could, what evidence do we have, based on longitudinal studies, that infants exposed to lower or higher adult to children ratios exhibit the same or similar lack of child-care syndromes? What evidence do we have that even the cognitive development of infants exposed to day care fall to the depressed levels of 80 points or below, when they return to their home-parent environment daily?

One must also recognize that research findings are not panaceas or solutions to relative problems, particularly if those findings do not answer the impertinent questions posed by those who most need pertinent but practical answers. To confuse research findings with solutions is to tread on dangerous ground. Although research findings indicate that high adult to children ratios can produce increases in cognitive functioning in infant children, they do not imply that all young

children need to be injected with large doses of cognition. Even those early childhood intervention programs that have produced gains in IQ, particularly in poor or minority children, only a few of these children have maintained these gains after they have exited the programs and returned to the real world. Although infants may spend ten or more hours per day in a day care center, the core of children's lives is their home; the most significant people in children's lives are their parents. Consequently, if any lasting effects are to be derived from whatever IQ gains the child experiences in care away from home, the parents would have to provide the energetics to sustain these gains, regardless of the adult-child ratios in the home setting.

When day care providers--particularly private and proprietary providers--blindly follow the results of researcy findings to set policy, the rigid FIDCR adult-child ratios, including the financial ability of parents to sustain these ratios, the number of infants they can serve is seriously limited. When this happens, the "underground operators" proliferate where no standards are met and the quality of care diminishes. Although it is agreed that "The advantage of 1:1 ratios reaches its peak in the literature on development of superior abilities (Fowler, p. 22)," the unanswered question

remains as it refers to day care: To what extent are day-care providers to be charged with the responsibility of developing superior abilities in infant children, while they provide a good, safe place where children can grow and develop until they return to the continuous care of their parents, whose interactions may or may not provide for quality intensive attachment to a caring, significant adult who stimulates overall development?

It is equally difficult to perceive how the effect of adult-child ratios in the form of both first born and one-child status (Fowler, p. 22) can apply to the day care setting. An infant is no less a first born or an only-child in the eyes of his or her parents, who, often for purposes of group socialization, place the child in a day-care center. The time spent in quality interactions between an only-child--or any child--and the parents may well depend, in large measure, on the quality of the home environment. Assuming that the quality of the interactions between the parent and child is the most important factor contributing to intensive attachment to a significant adult, then, to what extent do lower or higher adult-child ratios, for a limited period of time during the day, jeopardize the infant's overall development? Research data indicate that an intact cohort is difficult to maintained over a sustained period

of time; that even when home tutoring projects terminate; poor children in most programs appear to regress to standard disadvantaged norms of low development. Therefore, IQ gains in day care centers leave serious unresolved problems, as to the utility of the effort. The question then is, could not the effort be more efficaciously spent on arranging the day care environment for good child care, with greater emphasis on overall development, and a good, safe place for infants?

Research data indicate that poor ratios range from 1:6 to 1:10 (Fowler, p. 23), and 1:2 and fewer under the best conditions (p. 18). Many low income parents of four or more home reared, close-aged children cannot afford the best adult-child conditions. Is the day-care provider to bear the additional burden of supplanting the quality of care that poor children receive in the home, and at the same time increase their cognitive functioning to the extent that it reaches or matches that of their middle-class counterparts? Would we be foolhearted enough to presume that an adult-infant ratio of 1:1 to 1:2 could produce sustained increases in the cognitive functioning of the culturally excluded children to the extent that they would later grow up with the intellectual disposition or propensity to change the social order? Of course not, and nothing in Fowler's

report suggests that this is paradoxically feasible. But, the tenor of his review suggests that this is possible, although, he states: "The adequacy of adult-child ratios is quite clearly one of the most significant unresolved problems for day care (p. 17)". He further points out such important factors as the flexibility of management, the attitudes of supervisors, and hours and working conditions. However, he maintains that the adult-child ratios work as profound effects on the performance of care-givers as the qualifications they bring to the setting. With this view, Fowler emphasizes the latter to the detriment of the former.

It is extremely difficult for one to argue against good adult-child ratios, and the positive effects that they can have on the cognitive development of the child. No where in Fowler's review was there mention of the empirical findings of child-care administrators and staff. Validated research relating to parental evaluations of the adult-infant ratios in day care centers is unknown to this author. The diversity of infant needs as these relate to personality development were given less space than adult-child ratios in Fowler's review. His premise that opportunities for personalized cognitive programming and monitoring, and time for preparation,

continuous in-service development, and essential staff rest periods--all of which combine to humanize the child-care environment, and foster the development of expression of competence--was less than fully developed. The problem of many child-care administrators and care-givers is that of providing quality care for the infants under their charge. This often mentioned, but underdeveloped, problem leaves much to be desired. Are caregivers left to believe that if these optimal conditions are not met, they are not providing quality child care as measured by adult-ratios?

Fowler postulates that ratios play a critical mediative role in the delivery of the care and stimulation essential to infant development, and that the first three years of infancy demand high-quality ratios. However, these ratios do not clearly indicate a dire necessity in a child-care center where children return each day to their parent-environment, where such ratios are either met or not met. Of course, we have learned the bitter ratio lesson from the earlier orphanages; also from underground operators who often provide low quality care and meet no standards, because low-income parents cannot afford to pay for the high-quality ratios in licensed day care centers. But, can what we have learned from these substandard conditions be directly equated with the

quality of care provided by day care centers as these relate to current adult-child ratios? Just as other circumstances clearly differentiate the various child-care settings such as nationality, caregiver quality and motivations, attachment relations, and intensity of program, this view has not been developed to the extent that it does not cloud the significance of ratio to quality in a day care setting.

Fowler clearly admits that "Good ratios are . . . a necessary though not a sufficient condition for the generation of optimum development (p. 24)." And, although, in spite of the fact that his review focuses on group care in away-from-home child care settings, Fowler seems to equate out-of-home ratios with in-the-home ratios, though admitting that we cannot identify all factors with certainty or determine their relative weight. However, "In the home, these mean love and permanent attachment between parents and child, bonds of trust and emotional support the child can count on to build a stable self-concept (p. 24)." Admitted that "In day care, these mean similar, but more diffuse and less durable ties of affection (p. 24), " the unanswered question is, To what extent is the day care provider to attempt to establish these "more diffuse and less durable ties of affection," and when and how will the infant

caregiver know they have been established? Does not the answer to this question deserve equal attention as the one related to cognitive development? Do these affective ties not provide the energetics for cognitive development? Is not cognitive development a function of the child's total social and emotional growth in a given culture, which not only affects what he cognizes but also how he cognizes?

It is difficult to disagree with the well-established and often accepted maxim that the adult is the main corner of knowledge and competencies historically acquired, without whose cognitive mediation the child can grasp little about the environment (Fowler, 1975). But, one must ask, To what extent is the acquisition or lack of acquisition of the historical conventions the result of day care combined with home care? Although Fowler does not suggest that day care is less efficient in fostering overall development than the typical small and isolated modern nuclear family, or the fast-disappearing large and extended family of yesteryear (p.25), he maintains that ratios are the key to quality care, especially when in day care the adult-infant ratio is 1:1, in spite of the high cost, which goes mostly for staff salaries. If low cost family day care is typically

at the expense of toys, play space, staff competence, training and supervision, then, the high cost of operating a good day care center, particularly for private and proprietary day-care providers, also limits the overall quality of care the infant receives. Staff salaries are the biggest item in day care budgets.

Although Fowler's review is based on results of scientific research and empirical evidence as these relate to cognitive functioning and IQ, they appear not to establish a sound basis for predicting a correlation between these and overall functioning in adulthood from the perspective of adult-infant ratios in day care centers. The most disastrous effects seem to be found in 24-hour institutionalized care, where infants often suffer maternal deprivation syndromes. In spite of the fact that some research results show small cognitive and IQ gains in infants serviced in day care centers, there is apparently a lack of longitudinal data that indicate that poor functioning at the adult level is the result of poor adult-infant ratios in day care centers.

What We Need To Know

In order to adequately settle the debate over the staff-infant ratios requisite for quality infant care in day care centers, the following ten suggestions are

offered as points of departure. The order in which they appear does not indicate a priority list, but rather a conglomerate of needed information.

1. Determine the amount, quality, and conditions of staff-child interaction required by most infants to grow, develop and function adequately, based on scientfic evidence.

2. Given the extreme threat to survival during infancy, determine the number of adults needed to monitor the physical and healthy well-being of a given number of infants, in order to prevent accidental injuries which can lead to death or physical impairment in day care centers.

3. Determine the extent to which day care centers should attempt to raise IQ's, as well as the standardized tests, with predictive validity, to be used as valid measures of infant IQ's.

4. Determine the appropriate kinds, quality, and amounts of social experiences and sensory stimulation required for the development of cognitive functions and language development in infant children. Also, determine the impact of the infant's family cultural constellations on the cognitive functioning of the infants in day care centers, as well as how biological development enmeshes with environmental influences on overall infant development.

5. Determine the appropriate nutriment and caring experiences required for infants to cope with the day care environment, in order to develop socio-emotional stability.

6. Determine the amount, kinds, and quality of actions needed for the achievement of competence, a feeling of relatedness or belongingness; and the nature and quality of interactions needed to develop a sense of self-identity, self-esteem, and a positive concept of self.

7. Determine how to arrange the day care environment in ways responsive to infants' psycho-cognitive and soci-emotional needs--that dignify infants as growing and developing individuals, that require them to acquire new skills and elaborate new roles in real-life and simulated situations; and then, provide for the caretakers criterion- referenced measures to indicate what knowledge, concepts and skills the infants are learning or have learned.

8. Determine the kind and quality of the day care physical and social environment requisite for the caregiver to create the conditions for optimum infant development, including the overall climate, the use of space and time, the activities or experiences, the methods and uses of equipment and materials, and the quality of

interactions that occur between infants and staff and among the infants themselves.

9. Determine the child rearing practices across family constellations and across family groupings, as these relate to their ethos, values, social norms, and the personality-need-dispositions inherent in diverse family cultural groups. That is, determine what child rearing practices are inherent in a society of contradictory values, social norms, and personal needs. Determine the points of congruence and incongruence between the extent to which the needs of the various family constellations are ignored or satisfied across social and cultural groups. Determine the extent to which the child's survival and coping needs are met within his family constellation and the extent to which they fulfilled in the day care center. Determine the extent of and compare the child rearing practices in the homes with the caregiving practices of the day care center, including the impact of such conditions affecting birth and infancy, the nature of infancy, the mechanisms of social control, the nature of the infant's learning experiences in the home-community, the characteristics and focus of education for the infants, the nature of infant learning experiences, the nature infant needs

and how they are satisfied or not satisfied in the home, the nature of infant play and the needs it satisfies; characteristics of the infants' households, the formal, informal, and technical integrations of the cultural components. In addition, there is a need to determine the family expectations for and from its children. In short, there is a need to know the driving forces motivating infant care behavior. If we knew these forces, not only would we understand better the issues relating to staff-infant ratios in day care centers but we could also make reasonable assumptions about how infants are likely to grow and develop in the day care center.

10. Finally, there is the need to select and train the appropriate staff, with the requisite caregiver sensitivity, to provide the best care possible for infants placed in day care centers.

The combined information derived from the above suggestions, based on scientific evidence, should indicate what a good staff-infant ratio should be in a particular day care center. The suggestions are not meant to be complete, but rather to point out some factors that need to be dealt with in efforts to settle the debate over adult-infant ratios in day care centers.

The message is: We need to pay more attention to

the provision of quality infant care in the day care center. Arguing, debating, bickering, wrangling, or polemicizing the adult-infant ratio issue in day care centers can cause one to lose sight of the essential task -- the provision of quality infant care. The answers to the questions and solutions to the issues lie not with the astuteness with which interest groups can debate or polemicize the questions and issues, but rather with child care providers doing whatever they can do to conduct the relevant scientific research to bring plausible answers to the impertinent questions and relevant solutions to the issues in the debate. The answers and solutions must speak to the conditions of good infant-care first; then specify the requisite number and qualifications of staff needed to provide quality infant care in day care centers.

The good early childhood program has three characteristics:

> It provides rich and varied learning experiences, it is staffed by caring, informed, and trained adults, it provides a physical environment which is safe as well as attractive and which promotes learning and healthy development (Committee on Early Childhood, 1972, p. 6).

Therefore, the dimensions of infant care mentioned above cannot be explained by using glittering generalities or any of the other value dimensions applying to infant care in general, or by using either the FIDCR staff-infant ratios, or those in state minimum standards for licencing day care centers in particular. These dimensions can only be validated by scientific evidence. There has to be a balance between the infants' survival needs--physical, health and safety--and the fulfillment of their cognitive, socio-emotional, and coping needs.

To effectively deal with these dimensions as they relate to staff-infant ratios in day care centers, there is a need for more and expanded scientific research relative to the particulars. More scientific research needs to be conducted in day care centers which care for infants. The research conducted by Honig and Lally, Bergstrom and Gold, Schaffer and Emerson, and Tizard, Cooperman, Joseph and Tizard needs to be replicated in a large number day care centers of all types that care for infants. Also, the survey-type research conducted by Zaccaria needs to be expanded to include not only the directors of day care centers but also the perceptions of the child-caring staff as to the number of

infants they feel capable of caring for effectively. In addition, surveys need to be conducted to determine parental attitudes and perceptions toward the kind and quality of care their infant children are receiving under the existing adult-infant ratios in day care centers, as well as their ability to pay for higher adult-infant ratios in keeping with what they expect for and from their children. The salutary results of such scientific research endeavors should yield pertinent and useful information relative to the questions posed, the issues raised, and the dimensions suggested for study.

It is important to note that one particular objective of the FIDCR Appropriateness Study mandated by Congress is to determine the effects of different caregiver ratios on behavior and development in children in day care centers. The results of this study should reveal findings relative to the impertinent questions and unresolved issues raised in this paper.

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